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Indian Standard
SPECIFICATION FOR
DOWEL PINS FOR USE IN FOUNDRIES
(First Revision)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR
DOWEL PINS FOR USE IN FOUNDRIES

(*First Revision*)

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Indian Standard

SPECIFICATION FOR
DOWEL PINS FOR USE IN FOUNDRIES

(*First Revision*)

O. F O R E W O R D

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 27 January 1986, after the draft finalized by the Foundry Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1971. While reviewing this standard in the light of the experience gained during these years, the Sectional Committee decided to revise it with the following main modifications:

- a) Material requirement has been modified,
- b) Hardness requirement has been incorporated, and
- c) Packing requirement has been incorporated.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for dowel pins and sockets used for locating and securing split patterns core boxes and dies, in foundries.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of dowel pins shall be as laid down in IS : 1918-1966†.

*Rules for rounding off numerical values (*revised*).

†Methods of physical tests for foundry sands.

3. TYPES OF DOWEL PINS

3.1 Dowel pins shall be of the following four types:

Type 1 — Dowel with socket as given in Table 1.

Type 2 — Plate dowel and socket without faucet as given in Table 2.

Type 3 — Plate dowel and socket with faucet as given in Table 3.

Type 4 — Dowel with socket for metal core boxes and dies as given in Table 4.

4. DIMENSIONS AND TOLERANCES

4.1 Shapes and sizes of dowel pins and sockets shall be as specified in Tables 1 to 4.

4.2 Tolerances on the dimensions as specified in Tables 1 to 4 shall meet the requirements of 'coarse class' of IS : 2102 (Part 1)-1980*.

5. DESIGNATION

5.1 Designation of each type of dowel and socket shall be as given in Tables 1 to 4.

6. MATERIAL

6.1 Insert dowel and sockets shall be manufactured from medium carbon steel conforming to Class 5 of IS : 1875-1978†, which shall be subsequently hardened and tempered.

6.1.1 The hardness of the insert dowel and socket in heat-treated condition (hardened and tempered) shall be in the range of 233-258HV.

6.2 Pin and bushes shall be of low carbon steel conforming to Class 2 of IS : 1875-1978†.

7. GENERAL

7.1 The rounding of the dowel shall be subject to the manufacturer's choice.

8. PACKING

8.1 Material shall be suitably coated with a thin film of rust preventive oil on all surfaces.

*General tolerances for dimensions and form and position : Part 1 General tolerances for linear and angular dimensions (*second revision*).

†Specification for carbon steel billets, blooms, slabs and bars for forgings (*fourth revision*).

8.2 Fifty sets of dowel pins of same size and type shall be packed in suitable wooden boxes.

9. MARKING

9.1 Each dowel pin shall be clearly marked with the manufacturer's name or trade-mark, manufacturing date, batch number and the designation of the dowel pin.

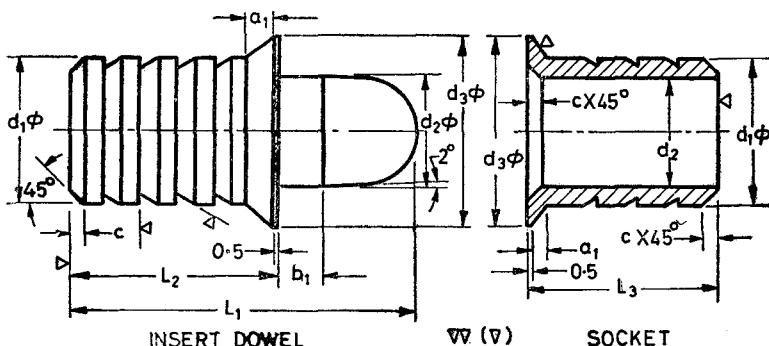
9.1.1 Each box shall also be marked with the information given under **9.1**.

9.2 It may also be marked with the ISI Certification Mark.

NOTE— The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

TABLE 1 TYPE 1 DOWEL WITH SOCKET(*Clauses 3.1, 4.1, 4.2 and 5.1*)

All dimensions in millimetres.



| d_1 | a_1 | b_1 | c | d_2 | d_3 | L_1 | L_2 | L_3 | NUMBER OF GROOVES | |
|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------------------|--------|
| | | | | | | | | | Dowel | Socket |
| 6 | 1 | 2 | 1.5 | 3 | 7 | 16 | 10 | 8 | 2 | 2 |
| 8 | 1.5 | 2.5 | 1.5 | 5 | 11 | 21 | 13 | 11 | 2 | 2 |
| 10 | 1.5 | 3 | 1.5 | 7 | 13 | 25 | 15 | 13 | 3 | 2 |
| 12 | 2 | 4 | 1.5 | 9 | 16 | 29 | 17 | 15 | 3 | 2 |
| 16 | 2 | 5 | 1.5 | 12 | 20 | 37 | 22 | 20 | 4 | 3 |
| 20 | 2 | 6 | 2 | 15 | 26 | 47 | 28 | 26 | 4 | 3 |

Designation of a dowel pin of outside diameter $d_1 = 10$ mm:

Insert Dowel 1-10 IS : 6401

Designation of a socket of outside diameter $d_1 = 10$ mm:

Socket 1-10 IS : 6401

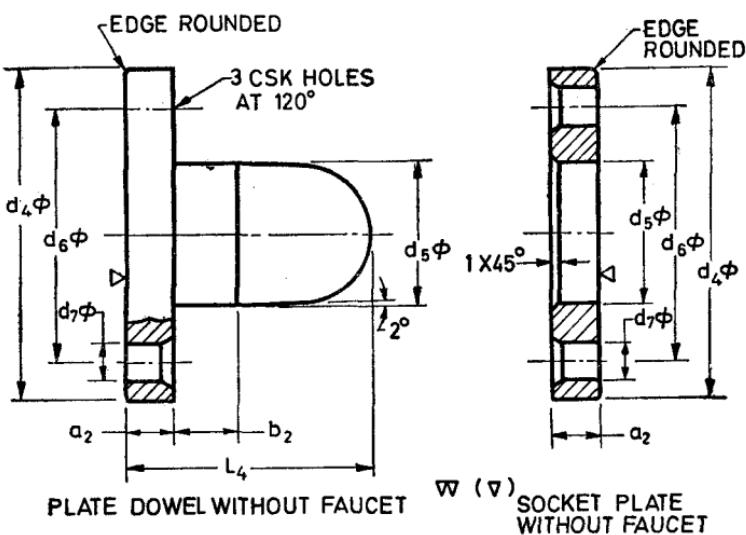
Designation of a complete dowel pin with socket of outside diameter $d_1 = 10$ mm:

Insert Dowel with Socket 1-10 IS : 6401

NOTE — The depth of recess of grooves shall not be more than half of the thickness of socket.

TABLE 2 TYPE 2 PLATE DOWEL AND SOCKET WITHOUT FAUCET(*Clauses 3.1, 4.1, 4.2 and 5.1.*)

All dimensions in millimetres.



| d_4 | a_2 | b_2 | d_5 | d_6 | d_7 | L_4 | Fixing with Three Countersunk Head Wood Screws, Screw Designation (see 3.1 of IS : 451-1972*) |
|-------|-------|-------|-------|-------|-------|-------|-------------------------------------------------------------------------------------------------|
| 30 | 4 | 5 | 12 | 22 | 3.7 | 19 | 7 |
| 36 | 5 | 6 | 15 | 26 | 4.3 | 25 | 8 |
| 42 | 6 | 8 | 18 | 32 | 4.8 | 31 | 9 |

Designation of plate dowel without faucet of diameter $d_4 = 36$ mm:

Plate Dowel 2-36 IS : 6401

Designation of a socket plate without faucet of diameter $d_4 = 36$ mm:

Socket Plate 2-36 IS : 6401

Designation of a complete plate dowel with socket plate, both without faucet of diameter $d_4 = 36$ mm:

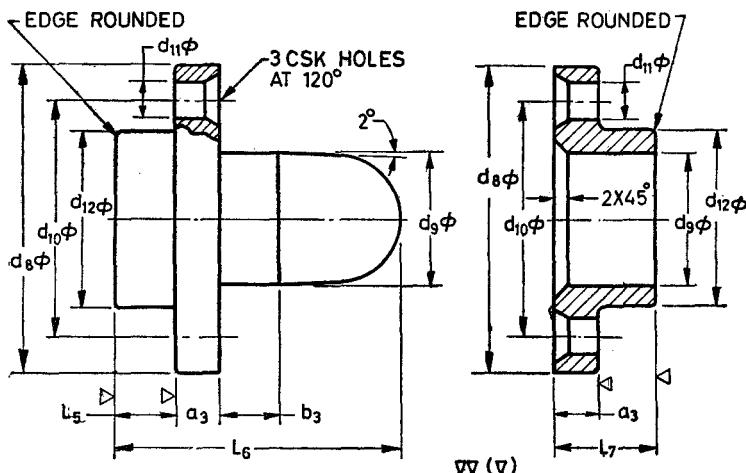
Plate Dowel with Socket Plate 2-36 IS : 6401

*Technical supply conditions for wood screws (*second revision*).

TABLE 3 TYPE 3 PLATE DOWEL AND SOCKET WITH FAUCET

(Claus 3.1, 4.1, 4.2 and 5.1)

All dimensions in millimetres.



| d_8 | a_8 | b_8 | d_9 | d_{10} | d_{11} | d_{12} | L_5 | L_6 | L_7 | Fixing with Three Countersunk Head Wood Screws. Screw Designation (see 3.1 of IS : 451-1972*) |
|-------|-------|-------|-------|----------|----------|----------|-------|-------|-------|--------------------------------------------------------------------------------------------------------------|
| 42 | 6 | 8 | 18 | 32 | 4.8 | 24 | 8 | 39 | 14 | 9 |
| 52 | 8 | 10 | 23 | 40 | 5.3 | 30 | 11 | 50 | 19 | 10 |
| 65 | 10 | 13 | 30 | 50 | 5.8 | 38 | 14 | 64 | 24 | 12 |

Designation of a plate dowel with faucet of diameter $d_8 = 52$ mm:

Plate Dowel 3-52 IS : 6401

Designation of a socket plate with faucet of diameter $d_8 = 52$ mm:

Socket Plate 3-52 IS : 6401

Designation of a complete plate dowel with socket plate of diameter $d_8 = 52$ mm

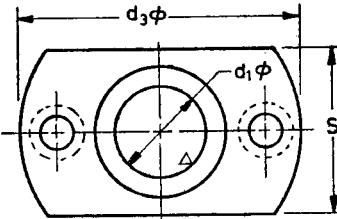
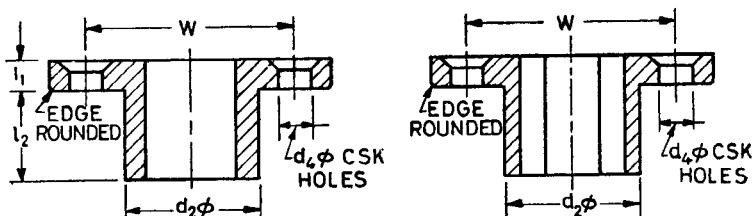
Plate Dowel with Socket 3-52 IS : 6401

*Technical supply conditions for wood screws (second revision).

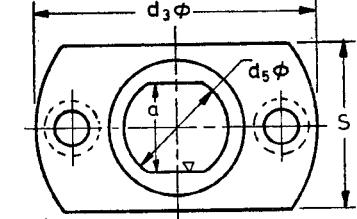
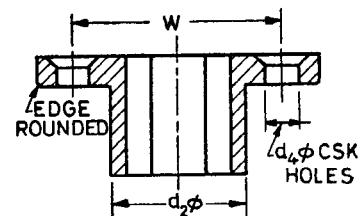
TABLE 4 TYPE 4 DOWEL WITH SOCKET FOR METAL CORE BOXES AND DIES

(*Clauses 3.1, 4.1, 4.2 and 5.1*)

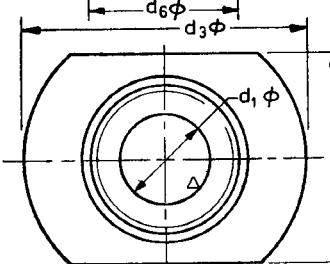
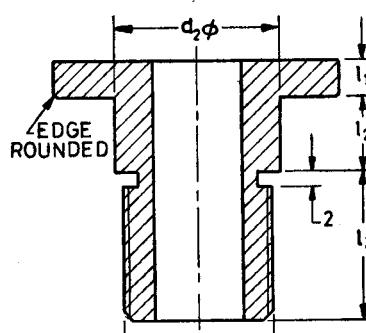
All dimensions in millimetres.



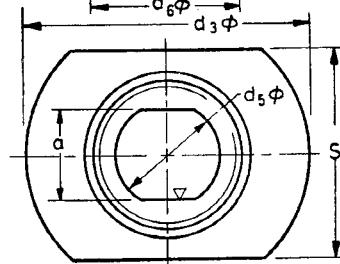
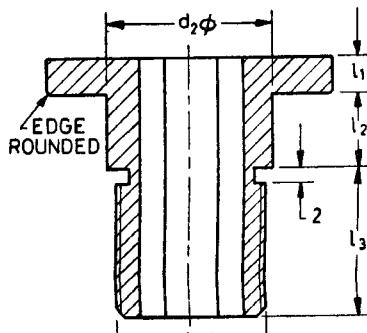
Bush No. 1



Bush No. 2



Bush No. 3



Bush No. 4

| *Combination | d_1 | d_2 | d_3 | d_4 | d_5 | d_6 | a | S | W | l_1 | l_2 | l_3 |
|--------------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-------|-------|-------|
| 1—1 | 12 | 18 | 38 | 4·3 | 14 | — | 12 | 22 | 28 | 4 | 12 | — |
| 1—2 | 16 | 22 | 46 | 5·3 | 18 | — | 16 | 28 | 33 | 5 | 16 | — |
| 1—3 | 20 | 26 | 50 | 5·3 | 22 | — | 20 | 32 | 38 | 5 | 16 | — |
| 1—4 | 22 | 28 | 52 | 5·3 | 24 | — | 22 | 36 | 40 | 5 | 16 | — |
| 2—1 | 12 | 22 | 38 | — | 14 | M20 | 12 | 28 | — | 5 | 10 | 20 |
| 2—2 | 16 | 26 | 46 | — | 18 | M24 | 16 | 32 | — | 6 | 12 | 24 |
| 2—3 | 20 | 30 | 52 | — | 22 | M27 | 20 | 36 | — | 6 | 12 | 26 |
| 2—4 | 22 | 32 | 56 | — | 24 | M30 | 22 | 40 | — | 6 | 16 | 28 |

*These indicate guide pin and bush combinations.

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

| QUANTITY | UNIT | SYMBOL |
|---------------------------|----------|--------|
| Length | metre | m |
| Mass | kilogram | kg |
| Time | second | |
| Electric current | ampere | A |
| Thermodynamic temperature | kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |

Supplementary Units

| QUANTITY | UNIT | SYMBOL |
|-------------|-----------|--------|
| Plane angle | radian | rad |
| Solid angle | steradian | sr |

Derived Units

| QUANTITY | UNIT | SYMBOL | DEFINITION |
|----------------------|---------|--------|---------------------------------|
| Force | newton | N | 1 N = 1 kg.m/s ² |
| Energy | joule | J | 1 J = 1 N.m |
| Power | watt | W | 1 W = 1 J/s |
| Flux | weber | Wb | 1 Wb = 1 V.s |
| Flux density | tesla | T | 1 T = 1 Wb/m ² |
| Frequency | hertz | Hz | 1 Hz = 1 c/s (s ⁻¹) |
| Electric conductance | siemens | S | 1 S = 1 A/V |
| Electromotive force | volt | V | 1 V = 1 W/A |
| Pressure, stress | pascal | Pa | 1 Pa = 1 N/m ² |



INDIAN STANDARDS INSTITUTION

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